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S/N: 10/708,356

REMARKS

Claims 1-30 are pending in the present application. In the Office Action mailed April 1, 2005, the Examiner rejected claims 1-9 under 35 U.S.C. §102(b) as being anticipated by Tran et al. NMR Biomed. 1999:12 pp 26-30. The Examiner next rejected claims 25-30 under 35 U.S.C. §102(b) as being anticipated by Zijl et al. (WO 03/050521 A1). Applicant appreciates the Examiner's indication of the allowability of claims 10-24.

The Examiner asserted that Tran et al. teaches that which is called for in claims 1-9. However, one of ordinary skill will readily recognize that Tran et al. does not teach or suggest that which is called for in claims 1-9 but teaches an MR imaging process utilizing magnetization transfer (MT) imaging. Therefore, Tran et al. teaches an MR imaging process having the drawbacks that the claimed invention overcomes, as set forth in the Background of the Invention section of the present application.

The large spectral width of 8 kHz taught by Tran et al. is consistent with MT imaging. See pg. 27 ¶2. As stated in the Background section of the Specification, the "MT effect" negatively affects MT imaging such that it cannot be accurately utilized to determine "changes in oxygen levels across the ROI," as called for in claim 1. See ¶[0009]. That is, as addressed in the Background section of the Specification, using MT imaging processes to image deoxy-hemoglobin and deoxy-myoglobin is hindered by the "MT effect" because "bound water signals in magnetic exchange with water can overlap the discrete chemical shifts" and frustrate image sensitivity when attempting to perform accurate oxygen concentration mapping. *Id.* Therefore, Tran et al. discloses a system and method that does not perform the steps of "exciting water-exchangeable spins in oxygen-bearing molecules in a region-of-interest (ROI) having a change in oxygen status; detecting proton transfer within the ROI from exchangeable protons within water; and determining changes in oxygen levels across the ROI," as called for in claim 1.

For at least these reasons, claim 1 is patentably distinct from the art of record. Additionally, claims 2-9 are in condition for allowance at least pursuant to the chain of dependency. However, though unaddressed by the Examiner, claims 2-9 include additional subject matter that further illustrates the points articulated with respect to claim 1.

For example, claim 3 calls for "selectively irradiating the ROI and distinguishing water signal changes within the ROI due to deoxy-hemoglobin and or deoxy-myoglobin from background MT effects." However, nowhere does Tran et al. teach or suggest any such selective irradiation. Rather, as previously stated, Tran et al. teaches a wide spectral width of 8 kHz that is associated with conventional MT, which considers a large frequency range. One of ordinary skill in the art will readily recognize that this wide spectral frequency range will cause bound water

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signals in magnetic exchange with water to overlap the discrete chemical shifts and interfere with the image sensitivity necessary to accurately "determine change in oxygen," as called for in claim 1, or distinguish "water signal changes within the ROI due to deoxy-hemoglobin and or deoxy-myoglobin from background MT effects," as called for in claim 3. As such, claim 3 further illustrates that Tran et al. does not teach or suggest the claimed invention.

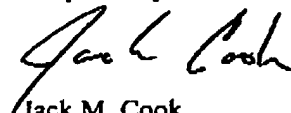
Regarding claim 25, the Examiner asserted that Van Zijl et al. teaches "a system of oxygen content determination." However, one of ordinary skill in the art will readily recognize that Van Zijl et al. does not teach or suggest the determination oxygen content. Rather, Van Zijl et al. is specifically directed to identifying and assessing pH effects and amide proton content to aid in the identification of disorders such as cancers, ischemia, Alzheimer's and Parkinson's. See pg. 7, ¶3 to pg. 8, ¶1. In this regard, nowhere does Van Zijl et al. teach or suggest "means for exciting spins limited to targeted oxygen-carrier molecules; means for determining a proton transfer from the targeted oxygen-carrier molecules to imageable molecules; and means for determining oxygenation of the targeted oxygen-carrier molecules from a reconstructed image of the imageable molecules," as called for in claim 25.

Accordingly, Applicant believes that claim 25 as well as claims 26-30, which depend therefrom, are in condition for allowance.

Therefore, in light of at least the foregoing, Applicant respectfully believes that the present application is in condition for allowance. As a result, Applicant respectfully requests timely issuance of a Notice of Allowance for claims 1-30.

Applicant appreciates the Examiner's consideration of these Remarks and cordially invites the Examiner to call the undersigned, should the Examiner consider any matters unresolved.

Respectfully submitted,



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